



## **Data Collection Software Used by Law Enforcement Agencies in Arizona**

FINAL REPORT TRQS-04

**Prepared by:**

ARCADIS G&M  
First Citizens Bank Plaza  
128 South Tryon Street, Suite 1100  
Charlotte, North Carolina 28202

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**Prepared for:**

Arizona Department of Transportation  
206 South 17<sup>th</sup> Avenue  
Phoenix, Arizona 85007  
in cooperation with  
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## **Data Collection Software**

TPD20-07

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Jason Harris  
Project Manager  
Arizona Transportation Research Center

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Jami Rae Garrison  
Data Bureau Manager  
ADOT Transportation Planning Division

---

David Ward  
Principal Investigator  
ARCADIS

---

Micah Callough  
Contributor  
ARCADIS

---

Jessica Brannock  
Contributor  
ARCADIS

Prepared for:  
Arizona Department of Transportation

Prepared by:  
ARCADIS G&M  
First Citizens Bank Plaza  
128 South Tryon Street  
Suite 1100  
Charlotte  
North Carolina 28202  
Tel 704.752.4258  
Fax 704.752.0271

Our Ref.:  
CN4AZDOT.CRSH

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## **Glossary of Acronyms**

ACJIS	Arizona Criminal Justice Information System
ADOT	Arizona Department of Transportation
ALISS	Accident Location Identification Surveillance System
ATRC	Arizona Transportation Research Center
CAD	Computer Aided Dispatch
CODES	Crash Outcome Data Evaluation System
DMS	Document Management System
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
GPS	Global Positioning System
RMS	Relational Management System
SDK	Software Development Kit
TRCC	Traffic Records Coordinating Committee

## **Introduction**

Arizona Transportation Research Center (ATRC) report, SPR 537 *Crash Data Collection and Analysis System* published in February 2006 documented best practices of crash data collection and analysis used by other states. However, the need exists for a more thorough analysis of crash data collection software used by law enforcement officers and agencies. A survey conducted by the Traffic Records Coordinating Committee (TRCC) in March 2007 showed that several different software programs are being used to collect crash data in Arizona. Of the twenty-five law enforcement agencies in Arizona that responded to the survey, over half indicated that they would be willing to try new crash data entry/citation issuance software if it were available to them at little or no cost. In addition, several law enforcement agencies in Arizona do not currently use software to collect and analyze crash data, and rely only on hand written forms. Thus, the current techniques of crash data collection in Arizona are labor-intensive and a significant burden on state and local resources. As discussed in report SPR 537, ADOT needs a cost-effective solution to enable it to efficiently process the nearly 135,000 crashes reported each year by local law enforcement agencies.

To assist ADOT and Arizona's law enforcement agencies to become more efficient and cost-effective in their crash data collection and reporting, ADOT contracted ARCADIS to: (1) conduct a follow-on survey of law enforcement agencies in Arizona to determine the software currently used to collect crash data, and (2) develop criteria and provide recommendations on the most efficient, effective and cost-beneficial crash data collection software for Arizona's law enforcement agencies based on local and national research.

## **Project Objectives**

To assist ADOT and Arizona's law enforcement agencies to become more efficient and cost-effective in their crash data collection and reporting, the project team designed a project to complete the following objectives:

### **Objective 1 – Law Enforcement Current Practices Report**

Conduct a comprehensive review and survey of the crash data collection software and current practices by law enforcement agencies in Arizona.

### **Objective 2 – Follow-up Questionnaire and Results**

Develop a follow-on questionnaire based on the March 2007 TRCC survey.

### **Objective 3 – ADOT Current Practices Report**

Meet with ADOT personnel and conduct a site visit to evaluate ADOT's current practices of collecting data from local agencies.

### **Objective 4 – Define System Business Requirements, System Selection Criteria, System Alternatives Report, and Detailed System Selection Analysis**

Develop criteria and recommendations on the most efficient, effective and cost-beneficial crash data collection software to use for Arizona's law enforcement agencies based on local and national research. The criteria shall include, at a minimum, information with regards to licensing, support, cost and ownership (i.e., proprietary).

### **Objective 5 – Overall Systems Research & Recommendations Report**

Provide all the justification and supplemental information necessary to support the recommendations.

### **Objective 6 – ATRC Quick Study Report**

Prepare an ADOT Quick Study Report in accordance with Arizona Transportation Research Center (ATRC) procedures.

### **Objective 7 – Executive-Level Presentation for the TRCC**

Conduct an executive-style presentation to the Traffic Records Coordinating Committee (TRCC).

## **Project Approach**

### **Task 1 – Kickoff Meeting**

ARCADIS participated with stakeholders in an on-site kickoff meeting to present and discuss the scope of work, project objectives, schedule, deliverables, and work plan.

### **Task 2 – Current Practices of Law Enforcement Agencies**

ARCADIS conducted a comprehensive review and survey of the existing Crash Data Collection software and current practices of the Law Enforcement Agencies within Arizona. ARCADIS developed a web-based survey and encouraged each agency to participate. ARCADIS has documented the findings of the research in the Law Enforcement Current Practices Summary.

### **Task 3 – Current Practices at ADOT**

ARCADIS met on-site with ADOT personnel to investigate and evaluate ADOT's current systems and practices for collecting crash data from law enforcement agencies. ARCADIS has summarized the findings of this investigation into the ADOT Current Practices Summary.

### **Task 4 – Systems Research Analysis**

ARCADIS used the information provided from Tasks 2 & 3 as well as additional outside research to conduct a four (4) part Systems Research Analysis.

#### *Task 4a – Business Requirements*

ARCADIS compiled the business and functional requirements necessary for law enforcement agencies and ADOT to effectively utilize a crash data system. The business requirements were broken down into two categories: (1) core system requirements and (2) non-core or additional functionality. The core business requirements were utilized as mandatory requirements to help whittle down the number of systems to research in Task 4b & 4c.

#### *Task 4b – System Alternatives*

ARCADIS compiled and investigated the various crash data systems in use by Arizona agencies as well as other prevalent systems throughout the United States. ARCADIS examined these systems for the core business requirements identified in Task 4a to determine if these systems met the minimum criteria necessary to serve law enforcement and ADOT users. Systems that did not meet the minimum requirement established by Task 4a were eliminated from further consideration.

#### *Task 4c – Detail Systems Selection*

ARCADIS identified the top six systems and gave these systems a more detailed review and analysis. ARCADIS and project stakeholders developed criteria in four categories: Functionality (core and additional), Cost, Maintainability, and Success/Risk. Each element within the four categories was given weight based upon the overall importance to the project team and assimilated into an overall scoring matrix. ARCADIS then conducted a thorough investigation into each element and category for the six selected systems.

#### *Task 4d – Rating & Scoring*

At the end of the investigations, ARCADIS assigned the ratings for each element to each system and analyzed the overall score for each system. ARCADIS documented these findings and provided justification as to the rating and scoring for each system.

#### *Task 5 – System Recommendations*

ARCADIS examined the ratings and scorings from Task 4d and reviewed all other project information to create formal recommendations as to how ADOT and the law enforcement community can most efficiently and cost-effectively utilize a crash data collection and reporting system. ARCADIS reviewed the information gathered throughout the project and compiled this information into a comprehensive project document. This document outlines and provides justification for ARCADIS's recommendations to ADOT and the law enforcement community.

#### *Task 6 – ADOT Quick Study Document*

ARCADIS created a Quick Study document that summarizes the project and recommendations.

#### *Task 7 – Presentation to Traffic Records Coordinating Committee (TRCC)*

ARCADIS compiled the overall findings from the project into a PowerPoint presentation for the TRCC meeting held September 18, 2007.

## Current Practices of Law Enforcement Agencies

### Law Enforcement Survey

To better understand the varying capabilities, business processes, and requirements of Arizona's law enforcement community with respect to crash data collection, a survey was created and distributed. The project team created a web-based survey that asked for detailed information about agencies' processes and practices. Survey questions were grouped into four sections that were tailored to the following four job positions: Field Officers, Approving Supervisor, Office Staff, and Information Systems/Information Technology (IS/IT) Staff.

The survey was designed to provide base-level information as to the current capabilities and needs of the law enforcement community. The survey provided a wealth of information to the project team including a list of existing data entry systems in Arizona, proportion of agencies without data entry systems, law enforcement business processes, and needs and wishes of the law enforcement community.

Law enforcement personnel that completed the survey were provided an opportunity to provide the project team with a wish-list of items that would make their daily routines easier. These open-ended responses provided the project team with significant insight as to items to look for in a new data collection system. Some of the responses are listed in Table 1.

<b>Please tell us how we can make your job better in regards to crash reporting and data entry:</b>
Electronic forms with electronic data transfer
Minimize the data sought. The less asked for, the more likely it will be complete and accurate.
A universal statewide electronic data transfer system with field reporting would be extremely beneficial.
1) One statewide system 2) Query crash data 3) XY coordinates
The system should allow citizens to access and download copies of accident reports.
1) GIS mapping and enhanced 911 for X,Y coordinate mapping 2) our system has a DUI Module, but we are not using it because its design does not match our data entry and reporting needs.
Availability to complete the form only once, on scene, in a computer entry format, and quickly without repeating the process later at the station.
Data entry for unlicensed undocumented aliens
We need the information in a more timely manner.
More user friendly system for diagramming collisions using programs
Accident forms should be digitalized but not locked down by the state. Individual agencies should have the ability to enter, edit, and modify all drop down lists and auto populate fields.
Auto-populate from the ACJIS interface
To use a fill-able form when completing a traffic collision.
Computerizing the state form making it accessible to law enforcement.
To enable electronic traffic accident reporting.

**Table 1 Results of Open-Ended Comments of Law Enforcement Community**

The survey resulted in sixty responses from forty-five agencies within Arizona. There was a good distribution of responsibility types and of agency sizes represented in the survey responses as shown in Table 2 and Table 3, respectively. The forty-five agencies reported 25 different Crash Data Collection Systems currently in use throughout the state as shown in Table 5.

<b>Please Select the category that best describes your position:</b>		
<b>Position</b>	<b>Response Percent</b>	<b>Response Count</b>
Field Officer	20.0%	12
Approving Supervisor	33.3%	20
Office Staff	40.0%	24
IT/IS Staff	6.7%	4

**Table 2 Results of Survey for Job Position Type**

<b>Annually, how many crashes occur within your agency/jurisdiction? (Rough guess is ok)</b>		
<b>answer options</b>	<b>Response Percent</b>	<b>Response Count</b>
Under 500	31.6%	18
500-1,000	22.8%	13
1,000-5,000	24.6%	14
5,000-10,000	10.5%	6
Over 10,000	10.5%	6

**Table 3 Results of Survey for Crashes within Jurisdiction**

Appendix A has a full list of survey questions and responses.

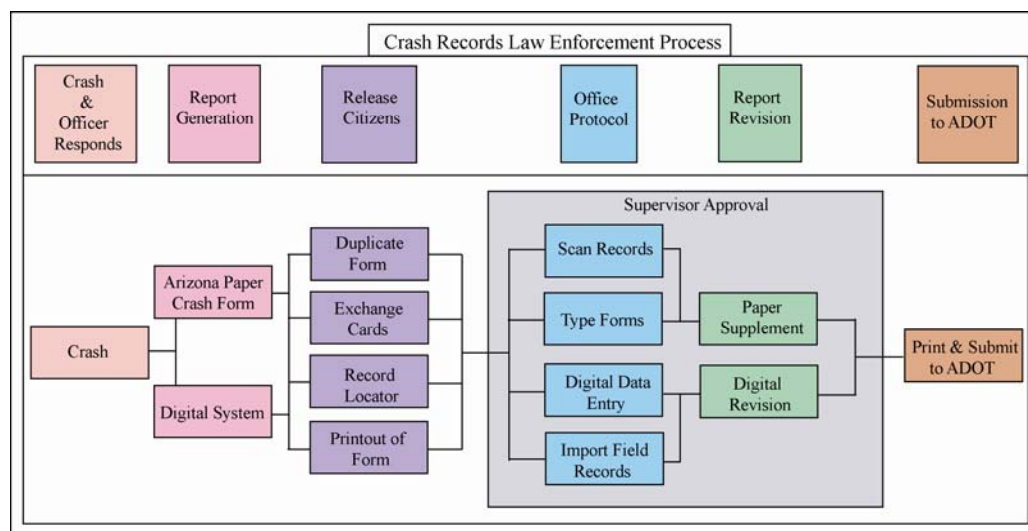
## Law Enforcement Practices

There are several different current practices within the law enforcement community of Arizona. Figure 1 shows the general movement of crash data from the crash scene to ADOT. Although each community is different, each typically follows one of these models in getting data to ADOT's Accident Location Identification Surveillance System (ALISS) database.

In most crash situations, an officer is deployed to the scene by a dispatcher who has received a request via a Computer Aided Dispatch (CAD) system. Many smaller jurisdictions do not have a CAD system and therefore this process occurs manually. The officer arrives at the crash, assesses and secures the scene, and collects information about the crash. The more progressive agencies within Arizona collect crash-based information directly into a laptop computer or handheld device. This digital tool can be as simple as a text form or as complicated as fully functional crash entry system. Upon completion of the state form (in digital or paper form), the officer performs one of four tasks to provide the citizen with information: creates a duplicate of paper state form, generates driver exchange cards, distributes record locators, or prints out the digital form.

At the end of the officer's shift, the officer submits crash reports to the office for supervisory approval. Agencies with full crash systems directly import the crash forms into the digital system and the records will be approved or rejected by supervisory staff. Agencies without a digital system either scan the paper records into a Document Management System (DMS), type the forms using a typewriter, or type the forms into a digital system in the office, or do some combination of the above.

All these methods ultimately result in either supervisor approval or request for record revision. When the records are approved, irrespective of the collection and storage method, the records are printed as hardcopy and mailed to ADOT for entry into ALISS.



**Figure 1 Generalized Law Enforcement Current Practices**

## Current Practices at ADOT

ADOT currently receives individual reports for all crashes within the state that have injuries, involve a commercial vehicle, or exceed \$1,000.00 in personal property damage. Local agencies send ADOT these reports each month. All reports are submitted on paper, either typed by local agency staff or as printouts from agency systems. When ADOT receives these monthly reports, a receiving clerk sorts them by whether they are non-fatalities, truck/bus cases, and suspected fatalities as illustrated in Figure 2.

Reports deemed as suspected fatalities are noted as priorities and are entered into the Fatality Analysis Reporting System (FARS), after which they are returned to the normal ADOT data entry process. Truck/Bus reports are also noted as a priority and are entered into ALISS before the non-fatality records. All records are provided to the data processing specialists for entry into the ALISS system. The processing specialists scrub the data reports for data standardization and assign a Geographic Information System (GIS) point location to the crash. The specialists then type the information from the form into the system. Records that are dubious or that have a data problem get passed to processing leads for resolution and entry into the system. When the records are entered into the system, the originals are microfilmed and linked to the record in ALISS.

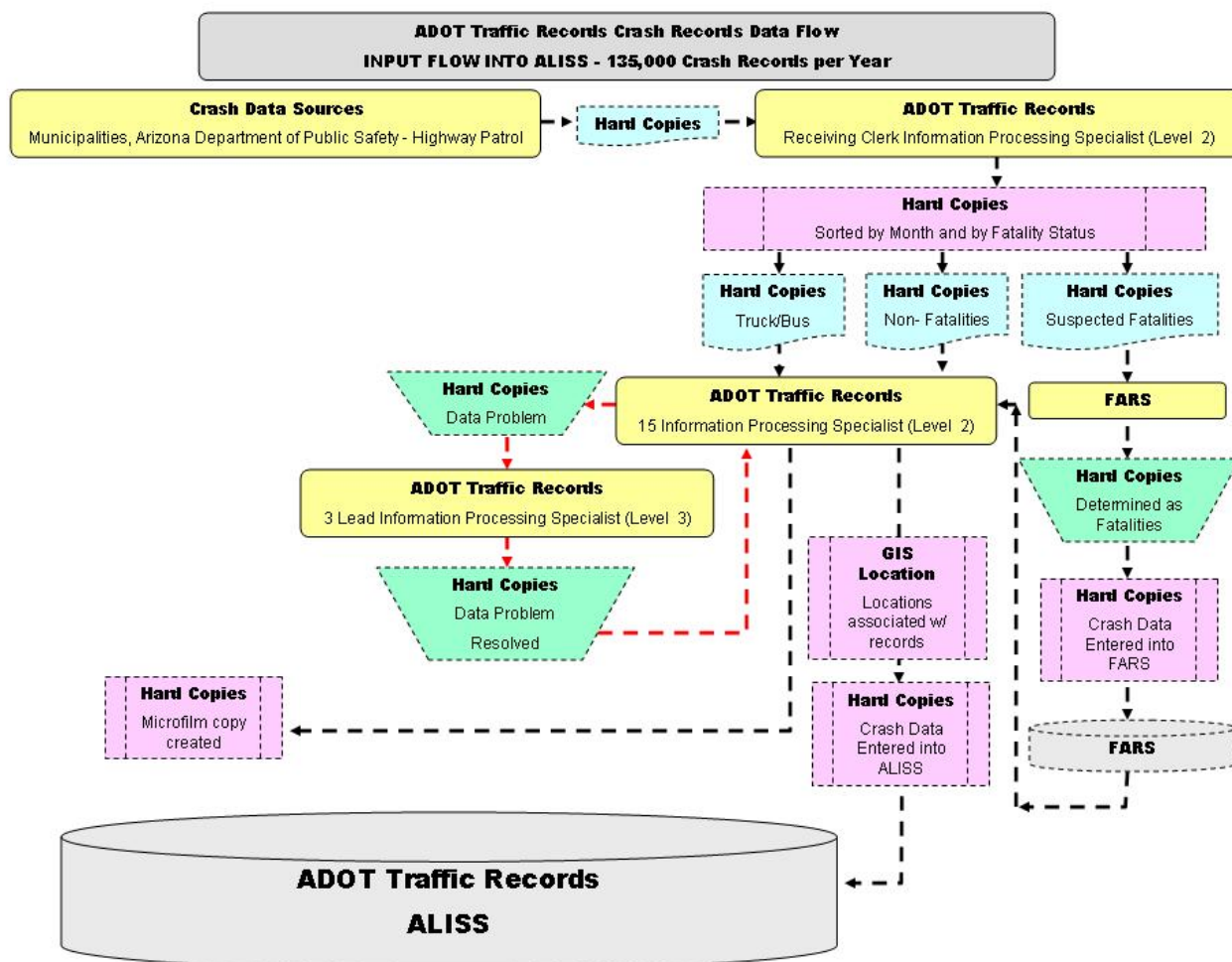


Figure 2 ADOT Crash Records Process

## Systems Research Analysis

### Business Requirements

The Systems Research Analysis portion of the project was developed in four parts: Business Requirements, System Alternatives, Detail Systems Selection, and Rating & Scoring. Each part of the analysis builds on the previous steps, ultimately narrowing the field of viable software packages. Business Requirements, the first step, are the key system functions required by ADOT and law enforcement agencies. A series of stakeholder meetings were conducted to determine the business requirements necessary for law enforcement data collection software. The results from the law enforcement survey also played a role in defining the business requirements. The business requirements were broken into two categories: Core Requirements and Non-Core Requirements; the latter being more desired functionality as opposed to a core requirement. The list of business requirements are shown in Table 4.

<b>Core Business Requirements</b>
Able to be Field Deployed (handheld & Laptop) & Must be Office Deployed
Basic Crash Diagramming Tool
Attach Crash Diagram and other Scan Documents (pdf, tiff, jpeg) to the report
Dispatch ID number entry
Data Entry must be driven by Drop Down Boxes (Pick List)
GPS Coordinates – Lat/Long – GIS Map Location
DUI – Capable to Integrate w/ LEADRS
Bar Code Reader – Import onto Crash Form
Customizable/Selectable Data Entry Methodology (tabbed & full form)
Integration w/ Centralized Database – Auto Load from field (ie. Disk, USB, WiFi)
Capable to Auto-Export to ALISS (and other ADOT databases)
Narrative Supplement
Fatal Supplement
Truck Bus Supplement
Search & Query for Records
Agency Selectable Permissions to Update/QAQC Records (lockout, amend, supplement, QAQC, change values)
Optimize Data Entry (only what is necessary – i.e. Intelligent form)
Capability for ADOT Change Crash Entry Form
Field Printing Capability
Capability to Auto Populate from ACJIS
Record Supervisor Approval Module
Ability to work w/ RMS/DMS
Capability to Implement Single Module (crash form, but not citations)
<b>Non-Core Business Requirements</b>
Capability to Issue Citations
Capability to Record Incidents
Capability to Record Field Contacts
Capability to Record and Issue Warnings
Display Crash locations on Map
Agency Customizable data entry form
Exchange Card & Record Locator Generation
Interface for Citizen Download of reports
Safety Analysis Assistance

**Table 4 List of Business Requirements**

## System Alternatives

The Law Enforcement Current Practices Survey and additional outside research supplied the list of crash data collection software that were eligible for review as shown in Table 5. Each system identified was investigated to determine whether it met the predetermined business requirements. Each system was given a pass/fail rating for each business requirement. Systems that passed almost all of the business requirements would be eligible for the next step in the analysis.

Data Collection Systems Evaluated in System Alternatives	
TADS	PDEP
Sleuth RMS	DART
Priors	Microsoft Word
ICIS	Oracle
SIRE	Millennium
Spillman (Summit)	psNET
Report Beam	AthenaRMS
Intergraph Public Safety (ILEADS)	TIES
Quickscene	Sun Ridge Systems
CODY	VisionTEK
RMS	Visual Statements
Crimestar	ADSi
HTE (Sunguard)	SafteyNet
LEADRS	Map Scenes
New World Systems (AEGIS)	PSSI
TraCS	DaProSystems
BARD	Personnel Deployment Systems
CHIPS	Advanced Public Safety (APS)

**Table 5 Data Collection Systems Evaluated in System Alternatives**

Appendix B has the full scoring matrix of System Alternatives evaluated.

Systems that did not provide information on functionality or that could not confirm system functionality could not be evaluated in this study.

## Detail System Selection

The stakeholder group convened again to develop the Detailed System Selection Criteria. The Detailed Systems Selection Criteria were divided into four categories: Functionality (Business Requirements), Cost, Maintainability, and Success/Risk.

Elements were devised for each category to weigh the data collection systems against each other to help determine the best system for ADOT and law enforcement agencies. Each element was given a point value to provide weight to the overall scoring for each element and category as shown in Table 6. The stakeholder group determined that Functionality should be worth about 40% of the overall score. Cost should also comprise about 40% of the overall score, Maintainability should be about 15%, and the remaining 5% for Success/Risk factors.

System Category	Element Value
<b>Functionality</b>	
<b>Core</b>	
Able to be Field Deployed (handheld & Laptop) & Must be Office Deployed	5
Basic Crash Diagramming Tool	5
Attach Crash Diagram and other Scan Documents (pdf, tiff, jpeg)	5
Drop Down Boxes (Pick List)	5
GPS Coordinates – Lat/Long – GIS Map Location	3
Dispatch ID number entry	5
DUI – Integration w/ LEADRS	3
Bar Code Reader – Import onto Crash Form	4
Customizable/Selectable Data Entry (tabbed & full form)	4
Integration w/ Centralized Database – Auto Load from field (ie. Disk, USB, WiFi)	5
Auto-Export to ALISS (other ADOT db)	5
Supplemental Narrative	5
Fatal Supplement	5
Truck Bus Supplement	5
Search & Query for Records	5
Agency Selectable to Update Records (lockout, amend, supplement, QAQC, change values)	4
Optimize Data (only what is necessary - Intelligent)	3
ADOT Change Form	5
Field Printing Capability	5
Auto Populate from ACJIS – Capability	4
Record Approval Module	4
Ability to work w/ RMS/DMS	5
Implement Single Module (crash, but not citations)	5
	<b>104</b>
<b>Non-Core</b>	
Citations	1
Incidents	1
Field Contacts	1
Warnings	1
Display location on Map	1
Customizable data entry form (Agency)	1
Exchange Card & Record Locator Generation	2
Interface for Citizen Download of reports	1
Analysis Assistance	1
	<b>10</b>
<b>Cost</b>	
Software Cost & Licensing	46
Customization	23
Annual Maintenance	10
Source Code	10
Support	15
	<b>104</b>

<b>Maintainability</b>	
Platform	3.8
Language	3.8
Database	3.8
Staff	3.8
Maintenance (system)	3.8
Customization	3.8
Upgrades	3.8
Customization vs. Upgrade	3.8
Source Code	3.8
Support	3.8
	<b>38</b>
<b>Success/Risk</b>	
Company Stability	2
Source Code/Customization/Documentation	3
Years in Business	2
In-line with ADOT Principles	2
In-Line with ADOT software standards	2
If company is gone, can ADOT/Agencies carry on?	2
	<b>13</b>
<b>Totals</b>	<b>269</b>

**Table 6 Detail System Selection Criteria Weighting**

The systems that met nearly all of the business requirements in Table 6 were eligible for the detailed system selection component of the analysis. Six systems were passed along to this phase where a much more robust review process took place. These six systems are shown in Table 7.

<b>Systems Eligible for Detailed Systems Selection</b>
Advanced Public Safety (APS, Report Beam)
CODY
HTE (Sunguard)
New World Systems (AEGIS)
Spillman (Summit)
TraCS

**Table 7 Systems Eligible for Detailed System Selection**

## Rating & Scoring

The six systems eligible for the Detail System Selection were provided the opportunity to perform a system demonstration to the project team. During the demonstrations, the project team asked questions and examined the systems for each element in the selection criteria. The project team took extensive notes and provided a score for each element. After the demonstration, the project team collaborated to provide the ultimate score for each element for each system. At the conclusion of the Rating and Scoring Analysis, the project team re-convened to review the scores assigned to each element and system to ensure consistency amongst all of the scores. The scores for each system were added and are displayed in the Scoring tables in the subsequent sections.

### Functionality Scoring

Each system was evaluated and provided a score based upon how the particular system handled the element against the overall ideal functionality. Therefore, a system obtained full points if the system performed the function in the most efficient and effective manner. If a system could not perform the function, zero points were awarded for that element.

### Cost Scoring

Each system was given a score for the cost based upon a range of cost for each element. Many systems provided costing in different formats and differing levels of support, implementation, customization, and licensing. The project team evaluated the costing provided to derive a score for each system and element. The range of scoring is derived by examining the cost for the element in relation to the benchmark i.e., the lowest cost in the category.

A linear regression analysis was applied to each value range from the lowest cost until six value ranges were created. The lowest value range is up to \$50,000, next range limit was twice the maximum allowed in the previous range as shown in Table 8, e.g., range limits set at 50, 100, 200, etc.

	Value Range for Element (in 000's)	Points Awarded (15 Points Total)
1	\$0 to \$50.00	15
2	\$50.01 - \$100.00	12.5
3	\$100.01 - \$200.00	10
4	\$200.01 - \$400.00	7.5
5	\$400.01 - \$800.00	5
6	\$800.01 - \$1,600.00	2.5
7	Over \$1,600.01	0

**Table 8 Example of Cost Scoring**

The reasoning for this scoring system is that the lowest cost receives the most points and the more disproportionate the cost, the greater the difference in score.

It was the intent of the stakeholders to try to obtain source code for the system, if available. All of the vendors had varying comments about the release of source code and it was the determination of the project team that this element was unrealistic to score for cost. Some vendors were willing to provide the source code at a very high cost, however most were not willing to provide it at any price. Therefore, all systems scored a “0” for the source code requirement.

### **Maintainability Scoring**

Maintainability scoring was based on the level of effort required for ADOT and agency staff to maintain and support the system. Higher points were given to systems that required minimal or no involvement by ADOT and agency staff, while low points were given to systems that required significant ADOT and agency staff involvement. That said, more points were given to systems that aided ADOT and agency staff over those that did not provide tools to assist in the maintenance of the system.

### **Success/Risk Scoring**

Success and Risk element scores were derived by judgment of the project team as to the success and risk of a particular system to the long term success of the systems deployment. Full points were given to systems that demonstrated stability in the marketplace and willing to work with ADOT going forward.

### **System Selection Scoring**

The result of the System Research Analysis led to clear and decisive software alternatives that can assist ADOT and Arizona’s law enforcement agencies to become more efficient and cost-effective in their crash data collection and reporting. Table 9 represents the overall scoring results of the six eligible systems identified in Table 7.

<b>Category</b>	<b>Value</b>	<b>APS</b>	<b>CODY</b>	<b>HTE</b>	<b>New World</b>	<b>Spillman</b>	<b>TraCS</b>
Functionality	114	104	96.5	88.5	106	89	111.5
Cost	104	53.8	43.8	43.8	43.8	41.3	62.3
Maintainability	38	34.2	31.2	29.4	29.4	31.2	26.4
Success/Risk	13	8	10	10	10	10	11
<b>Total</b>	<b>269</b>	<b>200</b>	<b>181.5</b>	<b>171.7</b>	<b>189.2</b>	<b>171.5</b>	<b>211.2</b>

**Table 9 System Selection Scoring Results**

Appendix C includes a detailed scoring matrix for each of the six systems evaluated.

## **System Recommendations**

All the systems reviewed by the project team are excellent. Each has its unique style and approach to the mission and each has strengths and weaknesses. The following recommendations are based on the scoring criteria established by the stakeholders and should only be used within this context.

This analysis provides two clear and different options to deploy a crash data collection system for ADOT and the law enforcement community. The top two software systems approach the system administration and deployment of crash data collection from completely different ends of the spectrum. Depending on ADOT's preferred approach to system administration and deployment, two very capable and affordable systems are available to meet the needs of ADOT and Arizona's law enforcement agencies.

### **ADOT and Agency Deployed and Administered Recommendation**

If ADOT prefers to minimize upfront costs and is willing to provide staffing for the deployment, administration, and support of the system, then project team recommends TraCS. TraCS was one of the two systems that passed all of the desired capabilities outlined in the Business Requirements. TraCS is also the least expensive system to acquire and deploy. The major drawback to TraCS is that ADOT and other agency personnel would need to perform the full system implementation, configuration, and support. There is a broad user community and support structure for TraCS and a full software development kit (SDK) is included with the licensing.

TraCS will provide the law enforcement community with a field-deployed solution for entering crash data. TraCS comes with an extensive diagramming tool and a centralized agency-level repository with a record approval module. TraCS' open data model enables integration with state databases such as ACJIS and ALISS and supports a variety of hardware configurations that includes barcode readers, magnetic readers, and GPS units. TraCS is very customizable and comes with an extensive SDK for enhanced development.

### **Vendor Deployed and Administered Recommendation**

If ADOT prefers to have a vendor develop, administer, support the system, then the project team recommends APS by Visual Statements. APS performed very well in the Business Requirements analysis and provides 100% administration and support of their product at a reasonable price. APS's deployment includes the development of a turn-key system with significant integration and customization. The major drawback to this system is that ADOT and local agencies would be permanently tied to the vendor. APS's business model is to provide complete system administration, upkeep, custom development, and support eliminating the possibility of ADOT taking control of the system. On the other hand, this eliminates the need for any ADOT or agency personnel to be involved in the upkeep of the system after initial deployment.

APS will provide the law enforcement community with a field-deployed solution for entering crash data. The APS solution includes diagramming tools and an agency-level repository with a superior record approval module. The APS solution will integrate barcode readers, GPS units, and GIS mapping into the data entry system. APS will build Arizona's state crash form and additional supplemental forms that include business intelligence to optimize data entry. The APS solution provides complete support and administration for the entire user community.

## **Appendix A**

### Survey Questions and Responses

## Law Enforcement Survey

1. **General-** Please provide your contact information below:

- |                 |                   |
|-----------------|-------------------|
| • Name          | • City/Town       |
| • Email Address | • State/Province  |
| • Address       | • ZIP/Postal Code |
| • Address 2     | • Phone           |

2. **General-** What agency/jurisdiction do you work for?

\_\_\_\_\_ Other (please specify) \_\_\_\_\_

3. **General-** How many law enforcement officers are in your agency/jurisdiction? (Rough guess is ok)

- |            |    |             |    |              |   |
|------------|----|-------------|----|--------------|---|
| • Under 50 | 14 | • 100-500   | 18 | • Over 1,000 | 7 |
| • 50-100   | 17 | • 500-1,000 | 1  |              |   |

4. **General-** Annually, how many crashes occur within your agency/jurisdiction? (Rough guess is ok)

- |             |    |                |    |               |   |
|-------------|----|----------------|----|---------------|---|
| • Under 500 | 18 | • 1,000-5,000  | 14 | • Over 10,000 | 6 |
| • 500-1,000 | 13 | • 5,000-10,000 | 6  |               |   |

5. **General-** Please select the category that best describes your position:

- |                        |    |                |    |
|------------------------|----|----------------|----|
| • Field Officer        | 12 | • Office Staff | 24 |
| • Approving Supervisor | 20 | • IT/IS Staff  | 4  |

6. **Field Officer-** Do you enter a Lat/Long coordinate on the crash form when responding to a crash?

- |       |    |
|-------|----|
| • Yes | 1  |
| • No  | 11 |

7. **Field Officer-** Do you get the Lat/Long coordinate from a GPS unit or from some other methodology?

- |                     |   |
|---------------------|---|
| • GPS Unit          | 1 |
| • Other Methodology | 0 |

8. **Field Officer-** Please very briefly describe the source of the coordinates:

\_\_\_\_\_

9. **Field Officer-** Do you record a Dispatch ID/Case Number/Incident Number/Event Number on the crash form?

- |       |    |
|-------|----|
| • Yes | 36 |
| • No  | 2  |

10. **Field Officer-** Does the Dispatch ID/Case Number/Incident Number/Event Number get automatically entered into the form from the CAD system?

- |       |    |
|-------|----|
| • Yes | 21 |
| • No  | 29 |

11. **Field Officer-** Do you most often fill out the Arizona Paper Crash Form or do you enter the information into a computer in the field?

- Paper Form 50
- Computer Form in the field (not in office) 19

12. **Field Officer-** What is the name of the computer based crash entry system?

---

13. **Field Officer-** Do some officers have a printer in their vehicle?

- Yes 0
- No 1
- Unsure 0

14. **Field Officer-** Are crash forms entered on a laptop or handheld device? (Multiple Responses are OK)

- Laptop 1
- Handheld Device 0
- Other 2

15. **Field Officer-** How does the crash record get back to the office? (Multiple Responses are OK)

- Wireless 1
- Wireless Access Point
- CD/DVD/USB Key
- Email
- Other 1
- Unsure

16. **Field Officer-** Does the crash form auto-populate when looking up information from ACJIS (Copy/Paste)?

- Yes 2
- No 38

17. **Field Officer-** Does the form have drop down boxes to choose values or do you type in all information on form?

- Drop Down Boxes 13
- Type in Information 25

18. **Field Officer-** Does the digital form have a component to diagram the crash?

- Yes 2
- No 0

19. **Field Officer-** Does the software also issue citations?

- Yes 32
- No 8
- Unsure 3

20. **Field Officer-** Does the software also record incidents?

- Yes 40
- No 1
- Unsure 4

21. **Field Officer-** Does the software also record field contacts?

- Yes 36
- No 3
- Unsure 4

22. **Field Officer-** Does the software also have a DUI module?

- Yes 10
- No 29
- Unsure 6

23. **Field Officer-** Do you have a scanner/bar code reader for licenses and registrations?

- Yes 0
- No 3

24. **Field Officer-** Does the scanned information auto populate information onto the crash, citation, incident, field contact, and DUI forms?

- No to All 3
- Yes-Crash 0
- Yes-Citation 0
- Yes-Incident 0
- Yes-Field Contact 0
- Yes-DUI 0

25. **Field Officer-** When the crash form is submitted for approval, does it get entered into a computerized system/database?

- Yes 47
- No 10
- Unsure 2

26. **Field Officer-** What is the name of the computerized system?

---

27. **Field Officer-** Are the crash diagrams and original reports scanned into the system?

- Yes 19
- No 23
- Unsure 3

28. **Field Officer-** Does the system allow you to examine, summarize, and search for records once they have been entered into the system?

- Yes 34
- No 3
- Unsure 8

29. **Field Officer-** Do you have a field and/or office based system for recording citations?

- Yes 32
- No 8
- Unsure 3

30. **Field Officer-** Do you have a field and/or office based system for recording incidents?

- Yes 40
- No 1
- Unsure 4

31. **Field Officer-** Do you have a field and/or office based system for recording field contacts?

- Yes 36
- No 3
- Unsure 4

32. **Field Officer-** Do you have a field and/or office based system with a special DUI module?

- Yes 10
- No 29
- Unsure 6

33. **Field Officer-** Is there capability to update/supplement records after submission, due to a fatality or other causes?

- Yes 36
- No 3
- Unsure 6

34. **Approving Officer-** When the crash form is submitted for approval, what format is the crash record? (Multiple Responses are OK)

- Handwritten Paper Form 50
- Typed Paper Form 14
- Digital Form in a System 19

35. **Approving Officer-** Do handwritten/typed crash forms get entered into a computerized system/database?

- Yes 47
- No 10
- Unsure 2

36. **Approving Officer-** What is the name of the computer based crash entry system?

---

37. **Approving Officer-** Does the crash form auto-populate when looking up information from ACJIS (Copy/Paste)?

- Yes 2
- No 38

38. **Approving Officer-** Does the form have drop down boxes to choose values or do you type in all information on form?

- Drop Down Boxes 13
- Type in Information 25

39. **Approving Officer-** Do you record a Dispatch ID/Case Number/Incident Number/Event Number on the crash form?

- Yes 21
- No 29

40. **Approving Supervisor-** Does the Dispatch ID/Case Number/Incident Number/Event Number get automatically entered into the form from the CAD system?

- Yes 21
- No 29

41. **Approving Supervisor-** Are the crash diagrams and original reports scanned into the system?

- Yes 19
- No 23
- Unsure 3

42. **Approving Supervisor-** Does the system allow you to examine, summarize, and search for records once they have been entered into the system?

- Yes 34
- No 3
- Unsure 8

43. **Approving Supervisor-** Do you have a field and/or office based system for recording citations?

- Yes 32
- No 8
- Unsure 3

44. **Approving Supervisor-** Do you have a field and/or office based system for recording incidents?

- Yes 40
- No 1
- Unsure 4

45. **Approving Supervisor-** Do you have a field and/or office based system for recording field contacts?

- Yes 36
- No 3
- Unsure 4

46. **Approving Supervisor-** Do you have a field and/or office based system with a special DUI module?

- Yes 10
- No 29
- Unsure 6

47. **Approving Supervisor-** Is there capability to update/supplement records after submission, due to a fatality or other causes?

- Yes 36
- No 3
- Unsure 6

48. **Approving Supervisor-** Does the system have the capability of displaying the crash location on a map?

- Yes 10
- No 27

49. **Office Staff-** When the crash form is brought in from the field, what format is the crash record? (Multiple Responses are OK)

- Handwritten Paper Form 50
- Typed Paper Form 14
- Digital Form in a System 19

50. **Office Staff-** Do handwritten/typed crash forms get entered into a computerized system/database?

- Yes 47
- No 10
- Unsure 2

51. **Office Staff-** What is the name of the computer based crash entry system?

---

52. **Office Staff-** Does the crash form auto-populate when looking up information from ACJIS (Copy/Paste)?

- Yes 2
- No 38

53. **Office Staff-** Does the form have drop down boxes to choose values or do you type in all information on form?

- Drop Down Boxes 13
- Type in Information 25

54. **Office Staff-** Do you record a Dispatch ID/Case Number/Incident Number/Event Number on the crash form?

- Yes 21
- No 29

55. **Office Staff-** Does the Dispatch ID/Case Number/Incident Number/Event Number get automatically entered into the form from the CAD system?

- Yes 21
- No 29

56. **Office Staff-** Are the crash diagrams and original reports scanned into the system?

- Yes 19
- No 23
- Unsure 3

57. **Office Staff-** Does the system allow you to examine, summarize, and search for records once they have been entered into the system?

- Yes 34
- No 3
- Unsure 8

58. **Office Staff-** Do you have a field and/or office based system for recording citations?

- Yes 32
- No 8
- Unsure 3

59. **Office Staff-** Do you have a field and/or office based system for recording incidents?

- Yes 40
- No 1
- Unsure 4

60. **Office Staff-** Do you have a field and/or office based system for recording field contacts?

- Yes 36
- No 3
- Unsure 4

61. **Office Staff-** Do you have a field and/or office based system with a special DUI module?

- Yes 10
- No 29
- Unsure 6

62. **Office Staff-** Is there the capability to update/supplement records after they are submitted, due to a fatality or other causes?

- Yes 36
- No 3
- Unsure 6

63. **Office Staff-** Does the system have the capability of displaying the crash location on a map?

- Yes 10
- No 27

64. **IT/IS Staff-** Are Officers required to record a Dispatch ID/Case Number/Incident Number/Event Number on the crash form?

- Yes 21
- No 29

65. **IT/IS Staff-** Does the Dispatch ID/Case Number/Incident Number/Event Number get automatically entered into the form from the CAD system?

- Yes 21
- No 29

66. **IT/IS Staff-** Do officers fill out the Arizona Paper Crash Form or do they enter the information into a computer in the field?

- Paper Form 50
- Computer Form in the field (not in office) 19

67. **IT/IS Staff-** What is the name of the field based crash entry system?

---

68. **IT/IS Staff-** Do some officers have a printer in their vehicle?

- Yes 0
- No 1
- Unsure 0

69. **IT/IS Staff-** Are crash forms entered on a laptop or handheld device? (Multiple Responses are OK)

- Laptop 1
- Handheld Device 0
- Other 2

70. **IT/IS Staff-** How does the crash record get back to the office? (Multiple Responses are OK)

- Wireless 1
- Wireless Access Point
- CD/DVD/USB Key
- Email
- Other 1
- Unsure

71. **IT/IS Staff-** Does the field based crash form auto-populate when looking up information from ACJIS (Copy/Paste)?

- Yes 2
- No 38

72. **IT/IS Staff-** Does the field based form have drop down boxes to choose values or do you type in all information on form?

- Drop Down Boxes 13
- Type in Information 25

73. **IT/IS Staff-** Does the field based digital form have a component to diagram the crash?

- Yes 2
- No 0

74. **IT/IS Staff-** Does the field based software also issue citations?

- Yes 32
- No 8
- Unsure 3

75. **IT/IS Staff-** Does the field based software also record incidents?

- Yes 40
- No 1
- Unsure 4

76. **IT/IS Staff-** Does the field based software also record field contacts?

- Yes 36
- No 3
- Unsure 4

77. **IT/IS Staff-** Does the field based software also have a DUI module?

- Yes 10
- No 29
- Unsure 6

78. **IT/IS Staff-** Do you have a scanner/bar code reader for licenses and registrations?

- Yes 0
- No 3

79. **IT/IS Staff-** Does the scanned information auto populate information onto the field based crash, citation, incident, field contact, and DUI forms?

- No to All 3
- Yes-Crash 0
- Yes-Citation 0
- Yes-Incident 0
- Yes-Field Contact 0
- Yes-DUI 0

80. **IT/IS Staff-** When the crash form is brought in from the field, what format is the crash record? (Multiple Responses are OK)

- Handwritten Paper Form 50
- Typed Paper Form 14
- Digital Form in a System 19

81. **IT/IS Staff-** Do handwritten/typed crash forms get entered into a computerized system/database?

- Yes 47
- No 10
- Unsure 2

82. **IT/IS Staff-** What is the name of the office based crash entry system?

---

83. **IT/IS Staff-** Does the office based crash form auto-populate when looking up information from ACJIS (Copy/Paste)?

- Yes 2
- No 38

84. **IT/IS Staff-** Does the office based form have drop down boxes to choose values or do you type in all information on form?

- Drop Down Boxes 13
- Type in Information 25

85. **IT/IS Staff-** Do you record a Dispatch ID/Case Number/Incident Number/Event Number on the office based crash form?

- Yes 21
- No 29

86. **IT/IS Staff-** Does the Dispatch ID/Case Number/Incident Number/Event Number get automatically entered into the office based form from the CAD system?

- Yes 21
- No 29

87. **IT/IS Staff-** Are the crash diagrams and original reports scanned into the office based system?

- Yes 19
- No 23
- Unsure 3

88. **IT/IS Staff-** Does the office based system allow you to examine, summarize, and search for records once they have been entered into the system?

- Yes 34
- No 3
- Unsure 8

89. **IT/IS Staff-** Do you have an office based system for recording citations?

- Yes 32
- No 8
- Unsure 3

90. **IT/IS Staff-** Do you have an office based system for recording incidents?

- Yes 40
- No 1
- Unsure 4

91. **IT/IS Staff-** Do you have an office based system for recording field contacts?

- Yes 36
- No 3
- Unsure 4

92. **IT/IS Staff-** Do you have an office based system with a special DUI module?

- Yes 10
- No 29
- Unsure 6

93. **IT/IS Staff-** Is there capability to update/supplement records after submission, due to a fatality or other causes?

- Yes 36
- No 3
- Unsure 6

94. **IT/IS Staff-** Does the office based system have the capability of displaying the crash location on a map?

- Yes 10
- No 27

95. **General-** Once the forms are filled out and everyone is ready to leave the scene, what is given to the citizen for reference to their report? (Multiple Responses are OK)

- |                                       |    |                            |    |
|---------------------------------------|----|----------------------------|----|
| • Exchange Cards                      | 30 | • Card with Record Locator | 12 |
| • Handwritten duplicate of State Form | 18 | • Other                    | 8  |
| • Printout of Form                    | 1  | • Unsure                   | 7  |

96. **General-** Do you have a need/interest in analyzing and searching for crash records once submitted for approval?

- Yes 48
- No 8

97. **General-** Would a field or office deployed digital map, with the capability to click a location, to assign the location of the crash instead of writing Route/Milepost or Intersection/Bearing/Distance be beneficial?

- Yes 45
- No 4
- Unsure 7

98. **General-** Do you have the need to collect additional information about a crash that is not on the State Crash Form?

- Yes 19
- No 38

99. **General-** Please list additional data that you collect or would like to collect that is not on the crash form:

---

100. **General-** Please tell us how we can make your job better in regards to crash reporting and data entry:

---

### What is the name of the computer based crash entry system?

- AGEIS
- BARD
- CHIPS (3)
- CODY (3)
- Crimestar
- Homegrown – Oracle-based system
- HTE (3)
- ICIS and SIRE
- ILEADS (2)
- Intergraph (3)
- New World Systems (2)
- PDEP/DART
- Priors
- ReportBeam (5)
- Sleuth (3)
- Spillman (4)
- System Name
- TADS
- TRACS
- Tucson Police Department's RMS
- Word

Note: Numbers in () show the number of responses.

### What agency/jurisdiction do you work for?

- Apache County Sheriff's Office (2)
- Arizona Game and Fish Department
- Arizona State Capitol Mall Phoenix/Tucson
- Arizona State Criminal Justice Commission
- Buckeye - 0703
- Bullhead City – 0805 (3)
- Clarkdale - 1301
- Coconino County - 0300
- Dept. of Public Safety – 0799 (2)
- Flagstaff - 0301
- Ft. McDowell Reservation - 0716 (3)
- Ft. Mohave Reservation - 0862
- Gila River Reservation (Pinal) – 1189 (2)
- Gilbert - 0711
- Glendale – 0713 (5)
- Goodyear - 0715
- La Paz County - 1500
- Lake Havasu City - 0804
- Marana - 1009
- Mohave County – 0800 (6)
- Northern Arizona University - 0397
- Paradise Valley - 0719 (2)
- Peoria - 0721
- Phoenix - 0723 (2)
- Pima Agency Law Enforcement - 6300
- Pima County - 1000
- Pinal County - 1100
- Prescott - 1307
- Salt River Reservation - 0789
- Santa Cruz County - 1200
- Scottsdale - 0725 (2)
- Sedona - 0310
- Show Low - 0903
- Sierra Vista - 0209
- Tempe - 0729
- Tucson - 1003
- University of Arizona - 1097
- Yavapai County - 1300
- Yuma - 1405
- Yuma County - 1400

Note: Numbers in () show the number of respondents from that agency.

### Please list additional data that you collect or would like to collect that is not on the crash form:

- Box for criminal charges
- BAC information, whether it is an alcohol related collision
- Input BAC test results back into ADOT form.
- In the passenger field and witness field, the ability to input date of birth for each person. In the driver's field, list the driver's physical description.
- Showing DUI arrests for drivers involved in accidents.
- Showing passengers in truck beds, not in passenger's compartment.
- Officers time of arrival, departure, and road closure information (time reopened)
- On the reservation insurance is not required for Native Americans, so a box indicating Native or Non-Native would benefit Salt River.
- Reasons of distraction for drivers
- AZ Game and Fish is responsible for entry of Boat Accident Data and reports directly to the Coast Guard BARD (Boat Accident Report Database). Changes have far reaching ramifications and, therefore, are difficult to implement.
- Birthdates of passengers
- Boat and aircraft as vehicles, ATVs or other all terrain vehicles (we are rural and many of the county roads are unpaved)
- GPS coordinates
- A form that tracks information needed for various grants that law enforcement agencies apply for.

**Please tell us how we can make your job better in regards to crash reporting and data entry:**

- To enable electronic traffic accident reporting.
- Computerizing the state form making it accessible to law enforcement. It would be easier for us to collect data if the forms were compatible with our data software. Currently there has been discussion of all agencies getting together to have that accomplished.
- To use a fillable form when completing a traffic collision.
- One system for all agencies to use.
- Accident forms should be digitalized but not locked down by the state. Individual agencies should have the ability to enter, edit, and modify all drop down lists and auto populate fields.
- The current method of accident reporting is suffice for our department. However, a statewide database to record statistical information directly would be beneficial. A good example of the type of data base I am referring to is the Arizona DRE logging process developed and in use by the Governor's Office of Highway Safety. If our agency had a member who could enter data onto a required statewide system, then our agency might be able to readily gain access to that information, for grant writing purposes and other needs. If our neighboring jurisdictions had a uniform means of doing this and the assigned departmental member could access it, then we could also access their information and specify assists that we completed with those agencies.
- A data base that would allow us to look at an area for the crashes. To assist us on required reports for ADOT and local Government reports.
- Availability to complete the form only once, on scene, in a computer entry format, and quickly without repeating the process later at the station. Thank you.
- It would be nice to have a state wide system (electronic) that is standard and mandated for use by each LE agency.
- Having 1 statewide system where all agencies could directly enter their data and then be able to query crash data for their jurisdictions and the surrounding areas would be beneficial. Having the information generate
- Just more information
- A uniform system for all state agencies would benefit the data entry and ability to analyze collision stats. Since a uniform state collision form is already used, it would make since to have a data system the same for all agencies.
- We don't use a CAD system.
- More user friendly system for diagramming collisions using programs
- Simplified reporting and data collection. Officers in our agency must do everything manually with tape measures and marking stakes
- Our agency uses software from Visual Statement to create a paper version of the state accident form. The data from this form is then used to do data entry into our RMS from Spillman Technologies; the state form is also scanned and available as an electronic file attachment within the Spillman software. It would be very beneficial to have the ability to create the state accident form from Spillman having the fields auto-populate from the ACJIS interface within the Spillman software and from the initial call information that was received; and then send the accident form digitally to the state, as well as have the digital version available as a file attachment for release to the public if requested.
- We need the information in a timelier manner. Our roads and driving behaviors change rapidly, therefore expedient proper analysis is imperative. We should also do studies that link communities such as in the Phoenix metro area. We are all one huge place without borders yet we all deploy our resources differently. We should look at what works in one community and see if its application could work somewhere else. Thanks for considering this input. It's appreciated.
- Our job in Records is only to capture the data and some queries were created to assist motors with getting the data they need to report and for grants, etc.
- Electronic submission of reports would increase timeliness of entry and help to get more real-time information.
- The information requested for GOHS grant reporting (especially for DUIs) does not match how data is gathered or stored by our system/database. This makes reporting extremely man-hour intensive.

XY coordinates in State Plane AZ Central NAD 83 ft. Financial support and or personnel requirements for doing the data entry into the system would also be advisable from the State so agencies could get FTE's authorized more easily through their own HR and city councils. It was also be advisable to actively participate with the Arizona Criminal Justice Commission work on data sharing and have a person from ADOT traffic records on the technical committee for criminal history information sharing as 2 finger ID devices, handheld data collection units for citations, and other such matters being discussed would help not only ADOT, but ACJC and the state-wide technical team members.

- An online system much like the DRE Program and DUI TF Reporting System
- Minimize the data sought. The less asked for, the more likely it will be complete and accurate.
- Just an FYI- We are in the process of testing 10 copies of ReportBeam as the collision software package. Once fully deployed, all of the officers will be able to complete the State Form at scene on their MDCs. Another side note- A large portion of our serious injury and/or fatal collisions involve unlicensed, undocumented aliens. It might be beneficial to create a field that can address that factor. This might help explain the large amount of fatalities in Arizona vs. other states.

Boating safety grants are dependent on similar traffic/ DUI data and may benefit by being included in a similar state reporting system. Also, being a rural area, GIS mapping and enhanced 911 for X,Y coordinate mapping of locations are still in their infancy of being developed. While our records management and CAD system are supposed to have the capability of X,Y mapping, it is not yet developed for data entry or data summary purposes at the county level (maps for municipalities in our area are much more complete). Both funding and personnel resources to complete map related projects for the county are lacking. As for DUI related events, our system has a DUI Module, but we are not using it because its design does not match our data entry and reporting needs. Coordination and data exchange between law enforcement and public works could be improved, but much of this may be limited by our mapping abilities.

- Create a user-friendly system of accident reporting that could be given to each agency to maintain consistency. The system should allow citizens to access and download copies of accident reports. The format should look like an accident report and have ease of use by patrol officers.
- A universal statewide electronic data transfer system with field reporting would be extremely beneficial.
- Name and Vehicle information is taken from the typed form and entered into our RMS Spillman-Summit.

## **Appendix B**

### System Alternatives Scoring Matrix

# Core Business Requirements For Arizona Based On Crash Data Collection Software Used by Law Enforcement In the United States

		Field & Office Deployed	Diagramming	Attach Document	Pick List	GPS/GIS	Dispatch ID	DUI	Scanner	Tab/Full Form	Central DB	Export to ALISS
	Software Package	Overall Pass/Fail	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F
1	PRIORS by Geo911(Positron)	FAIL	F	P	P	P	P	P	P	F	P	N/R
2	Sleuth RMS (ETS)	FAIL	P	F	P	P	P	N/R	P	F	N/R	N/R
3	ICIS (PSSI)	N/A	P	N/R	N/R	P	N/R	N/R	N/R	N/R	P	N/R
4	Spillman	PASS	F	F	P	P	P	P	P	F	P	P
5	Report Beam (Advanced Public Safety)	PASS	P	P	P	P	P	P	P	F	P	P
6	CODY	PASS	P	F	P	P	P	P	P	P	P	P
7	HTE (Sunguard)	PASS	P	P	P	P	P	P	P	F	P	P
8	Aegis (New World Systems)	PASS	P	P	P	P	P	P	P	P	P	P
9	TraCS (Iowa)	PASS	P	P	P	P	P	P	P	P	P	P
10	LEADRS	FAIL	P	F	P	P	P	P	P	P	P	P
11	TIES (CISCO)	FAIL	P	F	P	P	P	F	P	P	F	F
12	Sun Ridge Systems	FAIL	P	F	P	P	F	P	F	P	P	F
13	VisionTEK	FAIL	P	F	P	P	P	P	P	F	P	P
14	ADSi	N/A	N/R	F	N/R	P	N/R	N/R	F	N/R	N/R	N/R
15	SafteyNet (HiTech)	FAIL	P	F	F	P	P	P	P	F	P	N/R
16	DaProSystems	FAIL	P	P	P	P	P	P	P	F	P	
17	Larimore Associates	FAIL	P	P	P	P	P	F	P	F	P	P
18	Crimestar	FAIL	P	P	P	P	P	F	P	F	P	P
19	CARE (University of Alabama)	FAIL	F	F	F	F	F	F	F	F	F	F
20	Map Scenes	FAIL	F	P	F	F	F	F	F	F	F	F
21	Visual Statements (w/ APS ReportBeam)	FAIL	F	P	F	F	F	F	F	F	F	F
22	Intergraph Public Safety (LEADS)	FAIL	F	F	F	F	F	F	F	F	F	F
23	SIRE	FAIL	F	F	F	F	F	F	F	F	P	F
24	Quickscene (CAD Zone)	FAIL	F	P	F	F	F	F	F	F	F	F
25	AthenaRMS (InterACT)	FAIL	F	F	F	F	F	F	F	F	F	F
26	COPS	N/A	P	P	N/R	P	N/R	P	N/R	N/R	P	N/R

Continued....

		Text Supp	Fatal Supp	Truck/Bus Supp	Query	Updates	Intelligent	ADOT Change	Field Print	ACJIS	Approve Module	RMS/ DMS	Single Module
	Software Package	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F	P/F
1	PRIORS by Geo911(Positron)	P	P	P	P	P	P	F	P	P	P	P	P
2	Sleuth RMS (ETS)	P	P	P	P	N/R	N/R	F	P	N/R	N/R	P	P
3	ICIS (PSSI)	P	P	P	P	N/R	N/R	N/R	P	N/R	N/R	P	N/R
4	Spillman	P	P	P	P	P	P	P	P	P	P	P	P
5	Report Beam (Advanced Public Safety)	P	P	P	P	P	P	F	P	P	P	P	P
6	CODY	P	P	P	P	P	P	F	P	P	P	P	P
7	HTE (Sunguard)	P	P	P	P	P	P	F	P	P	P	P	P
8	Aegis (New World Systems)	P	P	P	P	P	P	P	P	P	P	P	P
9	TraCS (Iowa)	P	P	P	P	P	P	P	P	P	P	P	P
10	LEADRS	P	P	P	P	P	P	F	P	P	P	P	P
11	TIES (CISCO)	P	P	P	P	P	P	F	P	F	P	P	P
12	Sun Ridge Systems	P	P	P	P	P	P	F	F	F	P	P	F
13	VisionTEK	P	P	P	P	P	P	F	P	N/R	P	P	P
14	ADSi	N/R	N/R	N/R	P	N/R	F	N/R	N/R	N/R	P	P	N/R
15	SafteyNet (HiTech)	P	P	P	P	P	P	P	P	P	P	P	P
16	DaProSystems	P	P	P	P	P	F	F	P	P	F	P	P
17	Larimore Associates	P	P	P	P	P	F	F	P	P	P	P	P
18	Crimestar	P	P	P	P	P	F	F	P	F	P	F	F
19	CARE (University of Alabama)	F	F	F	F	F	F	F	F	F	F	F	F
20	Map Scenes	F	F	F	F	F	F	F	F	F	F	F	F
21	Visual Statements (w/ APS ReportBeam)	F	F	F	F	F	F	F	F	F	F	F	F
22	Intergraph Public Safety (LEADS)	F	F	F	F	F	F	F	F	F	F	F	F
23	SIRE	F	F	F	P	F	F	F	F	F	F	P	F
24	Quickscene (CAD Zone)	F	F	F	F	F	F	F	F	F	F	F	F
25	AthenaRMS (InterACT)	F	F	F	F	F	F	F	F	F	F	F	F
26	COPS	N/R	N/R	N/R	P	P	N/R	N/R	N/R	N/R	P	P	N/R

Notes:

- 1) Pass/Fail results for each of the criteria based on literature search, communication with vendor, and/or product demonstrations. Overall pass/fail was determined by the research team.
- 2) If software failed more than two core business requirements, it was not considered for further analysis.
- 3) The six software packages highlighted in table validated their capabilities with product demonstrations and were selected for detailed analysis.

## **Appendix C**

### System Selection Scoring

## Overall Scoring

	System Element	Element Value	APS	CODY	HTE	New World	Spillman	TraCS
1	Able to be Field Deployed (handheld & laptop) Must be Office Deployed	5	5	3.5	5	3.5	1	3.5
2	Basic Crash Diagramming Tool	5	5	0	2.5	4	0	5
3	Attach Crash Diagram & other Scanned Documents (pdf, tiff, jpeg)	5	5	5	5	5	5	5
4	Drop Down Boxes (Pick List)	5	5	5	5	5	5	5
5	GPS Coordinates – Lat/Long – GIS Map Location	3	3	2	2	2	2	3
6	Dispatch ID number entry	5	5	5	5	5	5	5
7	DUI – Integration w/ LEADRS	3	3	3	3	3	3	3
8	Bar Code Reader – Import onto Crash Form	4	4	4	4	4	2	4
9	Customizable/Selectable Data Entry (tabbed & full form)	4	0	0	0	4	0	4
10	Integration w/ Centralized Database Load from field (Disk, USB, WiFi)	5	5	3	5	5	2.5	5
11	Auto-Export to ALISS (other db's)	5	5	5	5	5	5	5
12	Supplemental Narrative	5	5	5	5	5	5	5
13	Fatal Supplement	5	5	5	1	5	5	5
14	Truck Bus Supplement	5	5	5	1	5	5	5
15	Search & Query for Records	5	5	5	2.5	2.5	5	5
16	Agency Selectable to Update Records	4	4	4	4	4	4	4
17	Optimize Data (Intelligent)	3	3	3	3	3	1	3
18	ADOT Change Form	5	0	0	0	5	2.5	5
19	Field Printing Capability	5	5	5	5	5	5	5
20	Auto Populate from ACJIS – Capability	4	4	4	4	4	4	4
21	Record Approval Module	4	4	4	4	4	4	4
22	Ability to work w/ RMS/DMS	5	5	5	5	5	5	5
23	Implement Single Module	5	5	5	5	5	5	5
	<b>Core Requirements Subtotal</b>	<b>104</b>	<b>95</b>	<b>85.5</b>	<b>80</b>	<b>98</b>	<b>81</b>	<b>102.5</b>
24	Citations	1	1	1	1	1	1	1
25	Incidents	1	1	1	1	1	1	1
26	Field Contacts	1	1	1	1	1	1	1
27	Warnings	1	1	1	1	1	1	1
28	Display location on map	1	1	1	1	1	1	1
29	Customizable data entry form (Agency)	1	0	0	0	1	0.5	1
30	Exchange Card & Record Locator Generation	2	2	2	2	2	2	2

31	Interface for Citizen Download of reports	1	1	0	1	0	0	0.5
32	Analysis Assistance	1	1	1	0.5	0	0.5	0.5
	<b>Non-Core Requirements Subtotal</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>8.5</b>	<b>8</b>	<b>8</b>	<b>9</b>
33	Software Cost & Licensing	46	7.6	7.6	7.6	7.6	0	46
34	Customization	23	23	23	23	23	23	3.8
35	Annual Maintenance	10	8.2	8.2	8.2	8.2	3.3	10
36	Source Code	10	0	0	0	0	0	0
37	Support	15	15	5	5	5	15	2.5
	<b>Costing Subtotal</b>	<b>104</b>	<b>53.8</b>	<b>43.8</b>	<b>43.8</b>	<b>43.8</b>	<b>41.3</b>	<b>62.3</b>
38	Platform	3.8	3.8	3.8	3.8	3.8	3.8	3.8
39	Language	3.8	3.8	3.8	2.8	3.8	3.8	3.8
40	Database	3.8	3.8	3.0	3.0	3.0	3.8	3.8
41	Staff	3.8	3.8	1.8	1.8	1.8	1.8	0
42	Maintenance (system)	3.8	3.8	3.8	2.8	2.8	2.8	0
43	Customization	3.8	3.8	3.8	3.8	3.8	3.8	3.8
44	Upgrades	3.8	3.8	3.8	3.8	3.8	3.8	2.8
45	Customization vs. Upgrade	3.8	3.8	3.8	3.8	3.8	3.8	2.8
46	Source Code	3.8	0	0	0	0	0	2.8
47	Support	3.8	3.8	2.8	3.8	2.8	3.8	2.8
	<b>Maintainability Subtotal</b>	<b>38</b>	<b>34.2</b>	<b>31.2</b>	<b>29.4</b>	<b>29.4</b>	<b>31.2</b>	<b>26.4</b>
48	Company Stability	2	2	2	2	2	2	2
49	Source Code/ Customization/Documentation	3	0	0	0	0	0	1
50	Years in Business	2	2	2	2	2	2	2
51	In-line with ADOT Principles	2	2	2	2	2	2	2
52	In-Line with ADOT software standards	2	2	2	2	2	2	2
53	If company is gone, can ADOT/Agencies carry on?	2	0	2	2	2	2	2
	<b>Success/Risk Subtotal</b>	<b>13</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>11</b>
	<b>Total</b>	<b>269</b>	<b>200</b>	<b>178.5</b>	<b>171.7</b>	<b>189.2</b>	<b>171.5</b>	<b>211.2</b>

**Software System: APS (Advanced Public Safety, Inc., A Trimble Company)**

	Business Requirements	Element Value	System Score	Score Justification
<b>Core</b>				
1	Able to be Field Deployed (handheld & laptop) & Must be Office Deployed	5	5	Field to office deployed including handheld devices
2	Basic Crash Diagramming Tool	5	5	Built-in, Smart Roads, basic diagramming to 3D animation, drawn to scale
3	Attach Crash Diagram & other Scanned Documents (pdf, tiff, jpeg)	5	5	Very flexible
4	Drop Down Boxes (Pick List)	5	5	Intelligent drop-down boxes
5	GPS Coordinates – Lat/Long – GIS Map Location	3	3	Can auto-populate from a GPS unit or manual entry; plots location on map
6	Dispatch ID number entry	5	5	
7	DUI – Integration w/ LEADRS	3	3	Must custom build
8	Bar Code Reader – Import onto Crash Form	4	4	Data clip created to store scanned information and auto-populates into the form
9	Customizable/Selectable Data Entry (tabbed & full form)	4	0	No Wizard-based tabbed form, only full form
10	Integration w/ Centralized Database – Auto Load from field (Disk, USB, WiFi)	5	5	WiFi or USB
11	Auto-Export to ALISS (other ADOT db)	5	5	Capable with customization (customize file format and delivery frequency)
12	Supplemental Narrative	5	5	Add/Create forms, spell check included
13	Fatal Supplement	5	5	Add/Create forms, spell check included
14	Truck Bus Supplement	5	5	Add/Create forms, spell check included
15	Search & Query for Records	5	5	Needs building, but available
16	Agency Selectable to Update Records	4	4	Very good, modification capability, very safe
17	Optimize Data (Intelligent)	3	3	Auto page population, cross-validation
18	ADOT Change Form	5	0	ADOT cannot change the form
19	Field Printing Capability	5	5	
20	Auto Populate from ACJIS – Capability	4	4	Can do, but must build
21	Record Approval Module	4	4	Multi-tiered approval process
22	Ability to work w/ RMS/DMS	5	5	Needs customization
23	Implement Single Module	5	5	
	<b>Subtotal</b>	<b>104</b>	<b>95</b>	
<b>Non-Core</b>				
24	Citations	1	1	
25	Incidents	1	1	
26	Field Contacts	1	1	
27	Warnings	1	1	
28	Display location on map	1	1	
29	Customizable data entry form (Agency)	1	0	APS must do all customizations
30	Exchange Card & Record Locators	2	2	

31	Interface for Citizen Download of reports	1	1	Can be hosted by ADOT or APS, can create accounts and purchase reports with credit cards
32	Analysis Assistance	1	1	Can build search and save results
	<b>Subtotal</b>	<b>10</b>	<b>9</b>	
<b>Cost</b>				
33	Software Cost & Licensing	46	7.6	Second Best
35	Customization	23	23	Customization Included
36	Annual Maintenance	10	8.2	Second Best
37	Source Code	10	0	
38	Support	15	15	Full Support Included with Maintenance
	<b>Subtotal</b>	<b>104</b>	<b>53.8</b>	
<b>Maintainability</b>				
39	Platform	3.8	3.8	Windows
40	Language	3.8	3.8	.NET
41	Database	3.8	3.8	SQL 2005, Oracle possible
42	Staff	3.8	3.8	No staff required
43	Maintenance (system)	3.8	3.8	
44	Customization	3.8	3.8	
45	Upgrades	3.8	3.8	
46	Customization vs. Upgrade	3.8	3.8	
47	Source Code	3.8	0	Source code N/A
48	Support	3.8	3.8	Training, customized manual, videos, demos
	<b>Subtotal</b>	<b>38</b>	<b>34.2</b>	
<b>Success/Risk</b>				
49	Company Stability	2	2	Currently 4 statewide, 400 agencies in 48 states
50	Source Code/Documentation	3	0	
51	Years in Business	2	2	9 years, acquired by Trimble in 2006
52	In-line with ADOT Principles	2	2	
53	In-Line with ADOT software standards	2	2	
54	If company is gone, can ADOT/Agencies carry on?	2	0	APS fully supports/no source code given
	<b>Subtotal</b>	<b>13</b>	<b>8</b>	
	<b>Totals</b>	<b>269</b>	<b>200</b>	

## Software System: Aegis Public Safety Software by New World Systems Corporation

	Business Requirements	Element Value	System Score	Score Justification
<b>Core</b>				
1	Able to be Field Deployed (handheld & laptop) & Must be Office Deployed	5	3.5	No handheld capability
2	Basic Crash Diagramming Tool	5	4	ScenePD included in system
3	Attach Crash Diagram & other Scanned Documents (pdf, tiff, jpeg)	5	5	Import as a Word document and attach in the RMS
4	Drop Down Boxes (Pick List)	5	5	
5	GPS Coordinates – Lat/Long – GIS Map Location	3	2	Can be custom built into address section; cannot assign location by clicking on map
6	Dispatch ID number entry	5	5	
7	DUI – Integration w/ LEADRS	3	3	
8	Bar Code Reader – Import onto Crash Form	4	4	Barcode and magnetic strip enabled-information into form via manual or auto population
9	Customizable/Selectable Data Entry (tabbed & full form)	4	4	Wizard-based tabbed and full form
10	Integration w/ Centralized Database – Auto Load from field (Disk, USB, WiFi)	5	5	USB/WiFi
11	Auto-Export to ALISS (other ADOT db)	5	5	
12	Supplemental Narrative	5	5	Embedded Microsoft Word, includes spell check
13	Fatal Supplement	5	5	Customized
14	Truck Bus Supplement	5	5	Customized
15	Search & Query for Records	5	2.5	Limited search functionality, needs the RMS
16	Agency Selectable to Update Records	4	4	Officer changes status to “complete,” then agency-defined approval process and security at the local level.
17	Optimize Data (Intelligent)	3	3	Mandatory fields/requirements based on initial data entry (e.g., commercial, two units involved)
18	ADOT Change Form	5	5	Agency can make data entry changes but not customizations
19	Field Printing Capability	5	5	
20	Auto Populate from ACJIS – Capability	4	4	Capable
21	Record Approval Module	4	4	Error checker
22	Ability to work w/ RMS/DMS	5	5	
23	Implement Single Module	5	5	
	<b>Subtotal</b>	<b>104</b>	<b>98</b>	
<b>Non-Core</b>				
24	Citations	1	1	Included in the complete public safety module
25	Incidents	1	1	Included in the complete public safety module
26	Field Contacts	1	1	Included in the complete public safety module
27	Warnings	1	1	Included in the complete public safety module
28	Display location on map	1	1	ESRI ArcView 9.2 with Aegis RMS

29	Customizable data entry form (Agency)	1	1	
30	Exchange Card & Record Locators	2	2	
31	Interface for Citizen Download of reports	1	0	Not currently, coming soon mid to late 2008
32	Analysis Assistance	1	0	None
	<b>Subtotal</b>	<b>10</b>	<b>8</b>	
<b>Cost</b>				
33	Software Cost & Licensing	46	7.6	Second Best
35	Customization	23	23	Customization Included
36	Annual Maintenance	10	8.2	Second Best
37	Source Code	10	0	
38	Support	15	5	Full Support Included with Maintenance
	<b>Subtotal</b>	<b>104</b>	<b>43.8</b>	
<b>Maintainability</b>				
39	Platform	3.8	3.8	Windows
40	Language	3.8	3.8	.NET
41	Database	3.8	3.0	SQL only
42	Staff	3.8	1.8	Staff required- minimum 1 to maximum of 2-4
43	Maintenance (system)	3.8	2.8	
44	Customization	3.8	3.8	Customization by New World Systems
45	Upgrades	3.8	3.8	New version release every 18-24 months
46	Customization vs. Upgrade	3.8	3.8	
47	Source Code	3.8	0	Source code N/A
48	Support	3.8	2.8	Need agency help desk (intermediate support)
	<b>Subtotal</b>	<b>38</b>	<b>29.4</b>	
<b>Success/Risk</b>				
49	Company Stability	2	2	1200 public safety, 600 public administration
50	Source Code/Documentation	3	0	
51	Years in Business	2	2	26 years
52	In-line with ADOT Principles	2	2	
53	In-Line with ADOT software standards	2	2	
54	If company is gone, can ADOT/Agencies carry on?	2	2	In escrow
	<b>Subtotal</b>	<b>13</b>	<b>10</b>	
	<b>Totals</b>	<b>269</b>	<b>189.2</b>	

## Software System: CODY Systems

	Business Requirements	Element Value	System Score	Score Justification
<b>Core</b>				
1	Able to be Field Deployed (handheld & laptop) & Must be Office Deployed	5	3.5	No handheld capabilities (work in progress)
2	Basic Crash Diagramming Tool	5	0	No diagramming tool available, 3 <sup>rd</sup> party required
3	Attach Crash Diagram & other Scanned Documents (pdf, tiff, jpeg)	5	5	Fully supported
4	Drop Down Boxes (Pick List)	5	5	
5	GPS Coordinates – Lat/Long – GIS Map Location	3	2	Latitude/longitude capable
6	Dispatch ID number entry	5	5	
7	DUI – Integration w/ LEADRS	3	3	Capable
8	Bar Code Reader – Import onto Crash Form	4	4	Capable
9	Customizable/Selectable Data Entry (tabbed & full form)	4	0	No Wizard-based tabbed form, only full form
10	Integration w/ Centralized Database – Auto Load from field (Disk, USB, WiFi)	5	3	Not USB/Disk capable, only WiFi (can work offline, but must enter a hotspot or bring into office to auto-send into the system)
11	Auto-Export to ALISS (other ADOT db)	5	5	Capable
12	Supplemental Narrative	5	5	
13	Fatal Supplement	5	5	
14	Truck Bus Supplement	5	5	
15	Search & Query for Records	5	5	via a “Search” button (e.g., by case #, date, agency, investigator, etc.)
16	Agency Selectable to Update Records	4	4	Fully permission defined by agency
17	Optimize Data (Intelligent)	3	3	Custom validation
18	ADOT Change Form	5	0	Agency cannot-CODY fully customizes/enhances
19	Field Printing Capability	5	5	
20	Auto Populate from ACJIS – Capability	4	4	
21	Record Approval Module	4	4	Notification system
22	Ability to work w/ RMS/DMS	5	5	
23	Implement Single Module	5	5	
	<b>Subtotal</b>	<b>104</b>	<b>85.5</b>	
<b>Non-Core</b>				
24	Citations	1	1	
25	Incidents	1	1	
26	Field Contacts	1	1	
27	Warnings	1	1	
28	Display location on map	1	1	

29	Customizable data entry form (Agency)	1	0	CODY does all
30	Exchange Card & Record Locators	2	2	Capable
31	Interface for Citizen Download of reports	1	0	Not available
32	Analysis Assistance	1	1	Flexible search capability
	<b>Subtotal</b>	<b>10</b>	<b>8</b>	
<b>Cost</b>				
33	Software Cost & Licensing	46	7.6	
35	Customization	23	23	Initial setup and customization included
36	Annual Maintenance	10	8.2	
37	Source Code	10	0	
38	Support	15	5	ADOT Help Center required
	<b>Subtotal</b>	<b>104</b>	<b>43.8</b>	
<b>Maintainability</b>				
39	Platform	3.8	3.8	Windows
40	Language	3.8	3.8	Delphi, Java
41	Database	3.8	3.0	Oracle only
42	Staff	3.8	1.8	Some staff required-system administrators
43	Maintenance (system)	3.8	3.8	100% coverage
44	Customization	3.8	3.8	
45	Upgrades	3.8	3.8	
46	Customization vs. Upgrade	3.8	3.8	
47	Source Code	3.8	0	Source code N/A
48	Support	3.8	2.8	Need agency help desk (intermediate support)
	<b>Subtotal</b>	<b>38</b>	<b>31.2</b>	
<b>Success/Risk</b>				
49	Company Stability	2	2	300 clients
50	Source Code/Documentation	3	0	Not available
51	Years in Business	2	2	28 years
52	In-line with ADOT Principles	2	2	
53	In-Line with ADOT software standards	2	2	
54	If company is gone, can ADOT/Agencies carry on?	2	2	In escrow
	<b>Subtotal</b>	<b>13</b>	<b>10</b>	
	<b>Totals</b>	<b>269</b>	<b>178.5</b>	

## Software System: Spillman Technologies, Inc.

	Business Requirements	Element Value	System Score	Score Justification
<b>Core</b>				
1	Able to be Field Deployed (handheld & laptop) & Must be Office Deployed	5	1	3 <sup>rd</sup> party mobile system, must be connected to load to server/no offline report tool
2	Basic Crash Diagramming Tool	5	0	No diagramming tool import from a 3 <sup>rd</sup> party
3	Attach Crash Diagram & other Scanned Documents (pdf, tiff, jpeg)	5	5	
4	Drop Down Boxes (Pick List)	5	5	
5	GPS Coordinates – Lat/Long – GIS Map Location	3	2	Enter latitude/longitude only
6	Dispatch ID number entry	5	5	Fully integrated
7	DUI – Integration w/ LEADRS	3	3	
8	Bar Code Reader – Import onto Crash Form	4	2	Provided by Advance Public Safety (APS)
9	Customizable/Selectable Data Entry (tabbed & full form)	4	0	No Wizard-based tabbed form, only full form
10	Integration w/ Centralized Database – Auto Load from field (Disk, USB, WiFi)	5	2.5	3 <sup>rd</sup> party mobile system
11	Auto-Export to ALISS (other ADOT db)	5	5	
12	Supplemental Narrative	5	5	Custom creation
13	Fatal Supplement	5	5	Custom creation
14	Truck Bus Supplement	5	5	Custom creation
15	Search & Query for Records	5	5	Very flexible, wildcard ability
16	Agency Selectable to Update Records	4	4	Permission-based
17	Optimize Data (Intelligent)	3	1	Built-in intelligence due in the next software release (predicted end of year release)
18	ADOT Change Form	5	2.5	Minimal changes only, requires Adobe
19	Field Printing Capability	5	5	
20	Auto Populate from ACJIS – Capability	4	4	
21	Record Approval Module	4	4	
22	Ability to work w/ RMS/DMS	5	5	
23	Implement Single Module	5	5	Only the HUB module (the RMS) is required
	<b>Subtotal</b>	<b>104</b>	<b>81</b>	
<b>Non-Core</b>				
24	Citations	1	1	
25	Incidents	1	1	
26	Field Contacts	1	1	
27	Warnings	1	1	
28	Display location on map	1	1	ESRI-based, AVL and route smart
29	Customizable data entry form (Agency)	1	0.5	Partially with Adobe
30	Exchange Card & Record Locators	2	2	Auto-populates
31	Interface for Citizen Download of reports	1	0	No capability

32	Analysis Assistance	1	0.5	ArcObjects-search and plot a pin map of locations
	<b>Subtotal</b>	<b>10</b>	<b>8</b>	
<b>Cost</b>				
33	Software Cost & Licensing	46	0	
35	Customization	23	23	Customization Included
36	Annual Maintenance	10	3.3	
37	Source Code	10	0	
38	Support	15	15	Full Support Included
	<b>Subtotal</b>	<b>104</b>	<b>41.3</b>	
<b>Maintainability</b>				
39	Platform	3.8	3.8	Windows, UNIX
40	Language	3.8	3.8	ArcObjects, VB, XML, C-Sharp
41	Database	3.8	3.8	SQL Standard, Faircom
42	Staff	3.8	1.8	System Administrator required
43	Maintenance (system)	3.8	2.8	Some
44	Customization	3.8	3.8	100% coverage
45	Upgrades	3.8	3.8	
46	Customization vs. Upgrade	3.8	3.8	
47	Source Code	3.8	0	Source code N/A
48	Support	3.8	3.8	
	<b>Subtotal</b>	<b>38</b>	<b>31.2</b>	
<b>Success/Risk</b>				
49	Company Stability	2	2	Private company; clients-750 agencies including in Vermont, Utah, South Carolina, Florida, California, etc
50	Source Code/Documentation	3	0	
51	Years in Business	2	2	29 years
52	In-line with ADOT Principles	2	2	
53	In-Line with ADOT software standards	2	2	
54	If company is gone, can ADOT/Agencies carry on?	2	2	
	<b>Subtotal</b>	<b>13</b>	<b>10</b>	
	<b>Totals</b>	<b>269</b>	<b>171.5</b>	

## Software System: Sunguard HTE

	Business Requirements	Element Value	System Score	Score Justification
<b>Core</b>				
1	Able to be Field Deployed (handheld & laptop) & Must be Office Deployed	5	5	Fully capable
2	Basic Crash Diagramming Tool	5	2.5	Microsoft Visio required with Wizard, auto-populates lanes, vehicles, etc
3	Attach Crash Diagram & other Scanned Documents (pdf, tiff, jpeg)	5	5	Attach 3 <sup>rd</sup> party diagram via the RMS in office
4	Drop Down Boxes (Pick List)	5	5	Pick list choices are agency-defined for some fields, e.g. codes
5	GPS Coordinates – Lat/Long – GIS Map Location	3	2	Through AVL-gathers speed, direction, lat/long, but no place to insert into form-must manually populate in the notes field-not most efficient
6	Dispatch ID number entry	5	5	
7	DUI – Integration w/ LEADRS	3	3	Possible, requires investigation
8	Bar Code Reader – Import onto Crash Form	4	4	Capable, but currently only for certain states
9	Customizable/Selectable Data Entry (tabbed & full form)	4	0	No Wizard-based tabbed format for crash report, only citations and tickets
10	Integration w/ Centralized Database – Auto Load from field (Disk, USB, WiFi)	5	5	Wireless submission or can save and load in office
11	Auto-Export to ALISS (other ADOT db)	5	5	
12	Supplemental Narrative	5	5	Has spell check
13	Fatal Supplement	5	1	Not really-only has a supplemental notes box
14	Truck Bus Supplement	5	1	Not really-only has a supplemental notes box
15	Search & Query for Records	5	2.5	Through the RMS, has advanced search options
16	Agency Selectable to Update Records	4	4	Permission-based through login credentials
17	Optimize Data (Intelligent)	3	3	Intelligent to number of vehicles, etc
18	ADOT Change Form	5	0	ADOT cannot change form because code driven
19	Field Printing Capability	5	5	
20	Auto Populate from ACJIS – Capability	4	4	Capable
21	Record Approval Module	4	4	Has capability
22	Ability to work w/ RMS/DMS	5	5	
23	Implement Single Module	5	5	
	<b>Subtotal</b>	<b>104</b>	<b>80</b>	
<b>Non-Core</b>				
24	Citations	1	1	
25	Incidents	1	1	
26	Field Contacts	1	1	
27	Warnings	1	1	In citation ticket
28	Display location on map	1	1	Location from the AVL geoverified
29	Customizable data entry form (Agency)	1	0	ADOT cannot, code driven

30	Exchange Card & Record Locators	2	2	Driver exchange form
31	Interface for Citizen Download of reports	1	1	Police to Citizen, requires RMS
32	Analysis Assistance	1	0.5	Limited analysis capability-requires RMS
	<b>Subtotal</b>	<b>10</b>	<b>8.5</b>	
<b>Cost</b>				
33	Software Cost & Licensing	46	7.6	
35	Customization	23	23	
36	Annual Maintenance	10	8.2	
37	Source Code	10	0	
38	Support	15	5	
	<b>Subtotal</b>	<b>104</b>	<b>43.8</b>	
<b>Maintainability</b>				
39	Platform	3.8	3.8	Windows
40	Language	3.8	2.8	FoxPro
41	Database	3.8	3.0	SQL Server only
42	Staff	3.8	1.8	Need staff to manage accounts, a system administrator
43	Maintenance (system)	3.8	2.8	
44	Customization	3.8	3.8	By Sunguard
45	Upgrades	3.8	3.8	Upgrade rollout tool to system administrator then to officers
46	Customization vs. Upgrade	3.8	3.8	
47	Source Code	3.8	0	Source code N/A-Sunguard maintains
48	Support	3.8	3.8	
	<b>Subtotal</b>	<b>38</b>	<b>29.4</b>	
<b>Success/Risk</b>				
49	Company Stability	2	2	Clients- >2400 municipalities
50	Source Code/Documentation	3	0	
51	Years in Business	2	2	26 years
52	In-line with ADOT Principles	2	2	
53	In-Line with ADOT software standards	2	2	
54	If company is gone, can ADOT/Agencies carry on?	2	2	
	<b>Subtotal</b>	<b>13</b>	<b>10</b>	
	<b>Totals</b>	<b>269</b>	<b>171.7</b>	

## Software System: TraCS

	Business Requirements	Element Value	System Score	Score Justification
<b>Core</b>				
1	Able to be Field Deployed (handheld & laptop) & Must be Office Deployed	5	3.5	No handheld capability
2	Basic Crash Diagramming Tool	5	5	Interfaces with five different diagramming tools including Easy Street Draw (3 <sup>rd</sup> party), TraCS diagramming tool (Visio-based), and Image & Capture (photos)
3	Attach Crash Diagram & other Scanned Documents (pdf, tiff, jpeg)	5	5	
4	Drop Down Boxes (Pick List)	5	5	Pick lists in the databar ensures integrity
5	GPS Coordinates – Lat/Long – GIS Map Location	3	3	Incident Location Tool- GIS based, point on map, auto-populates location
6	Dispatch ID number entry	5	5	Case number field
7	DUI – Integration w/ LEADRS	3	3	Capable via custom DLL
8	Bar Code Reader – Import onto Crash Form	4	4	Can interface to bar code reader or imager, auto-populates into form
9	Customizable/Selectable Data Entry (tabbed & full form)	4	4	Wizard-based tabbed and full form
10	Integration w/ Centralized Database – Auto Load from field (Disk, USB, WiFi)	5	5	Wireless or can operate in standalone mode and upload in office via disk / USB
11	Auto-Export to ALISS (other ADOT db)	5	5	
12	Supplemental Narrative	5	5	Narrative box
13	Fatal Supplement	5	5	Can modify original form or auto-populate copy
14	Truck Bus Supplement	5	5	Can modify original form or auto-populate copy
15	Search & Query for Records	5	5	Basic and Advanced Searches with wildcards
16	Agency Selectable to Update Records	4	4	Permission-based, fully customizable
17	Optimize Data (Intelligent)	3	3	Online validation and intelligent auto entry
18	ADOT Change Form	5	5	via the Software Development Kit (SDK)
19	Field Printing Capability	5	5	
20	Auto Populate from ACJIS – Capability	4	4	“External Search” tools
21	Record Approval Module	4	4	
22	Ability to work w/ RMS/DMS	5	5	Can export via email pdf, or ftp
23	Implement Single Module	5	5	
	<b>Subtotal</b>	<b>104</b>	<b>102.5</b>	
<b>Non-Core</b>				
24	Citations	1	1	
25	Incidents	1	1	
26	Field Contacts	1	1	
27	Warnings	1	1	
28	Display location on map	1	1	3 <sup>rd</sup> party-CTREA
29	Customizable data entry form (Agency)	1	1	SDK

30	Exchange Card & Record Locators	2	2	
31	Interface for Citizen Download of reports	1	0.5	Possible with customization
32	Analysis Assistance	1	0.5	3 <sup>rd</sup> party
	<b>Subtotal</b>	<b>10</b>	<b>9</b>	
<b>Cost</b>				
33	Software Cost & Licensing	46	46	Cheapest Solution
35	Customization	23	3.8	Need staff to make customizations
36	Annual Maintenance	10	10	Cheapest Solution
37	Source Code	10	0	
38	Support	15	2.5	Need Staff to provide support
	<b>Subtotal</b>	<b>104</b>	<b>62.3</b>	
<b>Maintainability</b>				
39	Platform	3.8	3.8	Windows XP and above
40	Language	3.8	3.8	VB 6, currently being rewritten in .NET
41	Database	3.8	3.8	Access, SQL, Oracle
42	Staff	3.8	0	Significant staff-staff for local support
43	Maintenance (system)	3.8	0	ADOT must do
44	Customization	3.8	3.8	SDK ADOT has full control over customization
45	Upgrades	3.8	2.8	Available to all states once a single state funds the enhancement
46	Customization vs. Upgrade	3.8	2.8	Requires some ADOT staff, next version will be backwards compatible
47	Source Code	3.8	2.8	Source code N/A, but object codes are available
48	Support	3.8	2.8	Need help desk (intermediate support)
	<b>Subtotal</b>	<b>38</b>	<b>26.4</b>	
<b>Success/Risk</b>				
49	Company Stability	2	2	Iowa Department of Transportation, created by Technology Enterprise Group
50	Source Code/Documentation	3	1	Object code only; Fully documented
51	Years in Business	2	2	TEG-8 years, TraCS- about 10 years
52	In-line with ADOT Principles	2	2	
53	In-Line with ADOT software standards	2	2	
54	If company is gone, can ADOT/Agencies carry on?	2	2	Iowa ownership, state would obtain a copy
	<b>Subtotal</b>	<b>13</b>	<b>11</b>	
	<b>Totals</b>	<b>269</b>	<b>211.2</b>	